



VOL. 14 OCTOBER 1954 NO. 1

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THE GEORGE WASHINGTON UNIVERSITY

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A MESSAGE TO COLLEGE ENGINEERING STUDENTS

from J. K. Hodnette, Vice-President and
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ON OUR COVER

By now even the newest of students should be well familiar with this biennial act caught by the MECHELECIV camera. Although the name is fictitious, the address is the same for all engineering students—The Davis-Hodgkins House.

—PHOTO BY STAN VEST

FRONTISPIECE

The first of thirty-five huge 25-million kva circuit breakers to be built by Westinghouse for Ohio's new 330-kv system.

—PHOTO COURTESY WESTINGHOUSE

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Preface

We are all accustomed to having the foreword in a book tell of what is to come and why the work is included. When then should a foreword not be included in the beginning of this volume of MECHELECIV? Perhaps this will enable the reader to understand what we are planning for this publishing year to enable us to find out more about what the reader wants to see in future issues.

The purpose of the October issue is to acquaint the new student with the student activities in the school as well as bring the old students and alumni up to date on the activities and policy changes that have been proposed during the summer months. The Engineers' Council president's message to the new students, the society and fraternity reports and the articles on the new course and the proposed changes in the Engineers' Council constitution fall into this category.

Also in the next issue, as will be the case in the majority of the proceeding issues, space is provided for Alumnnews. With the help of the alumni this feature can become a regular one in the magazine.

This year marks the twelfth anniversary for the MECHELECIV, and we shall commemorate the event with a feature in the near future showing the evolution of the magazine from a dittoed newspaper to the form in which it is now published.

The big event that has been promised the students and alumni by the University this year, the construction of Tompkins' Hall, will be reported on in subsequent issues.

In the spring, preceeding the Annual Student Paper Competitions, we shall publish the winning student papers from the past years, all of which are excellent.

We shall also report on the big social events of the year; such as Homecoming, the Spring Outings, the fraternity Banquets and Balls, and the Engineers' Banquet and Ball.

It is our hope that during this whole publishing year we shall present the magazine the way that you, our readers, want it. Throughout the year we shall welcome any suggestions from students and alumni on what features and articles you want to see in MECHELECIV. And, as we wish ourselves a successful publishing year, by the same token we wish all our student readers a very successful school year.



I have talked briefly with most of you who are entering the School of Engineering to begin your professional education or to complete studies started elsewhere. We haven't been able to discuss many things of pertinence. So these few words about your new school may be helpful

in making you feel at home and less confused.

First, I would tell you that this School is different. If you are discerning you know this by now; you have recognized our big-city nature, our lack of campus atmosphere, our seeming coldness (which is really nothing more than the reflection of the sophisticated, highly competitive, and socially complex environment that is Washington), and our tendency to treat you as an individual capable of making his own place — and of taking responsibility for himself.

Those of us who know and love this our School believe it probably is unique — and we are proud. Unique because no other school demands so much from you, yet offers you so much in return. Proud because what we have done, and what you will achieve, is the product of our own will and thought and sweat. No one stands here to lead you by the hand through the maze of new experiences, to spoon feed you with educational pap, or to tell you when to do what. We presume you are capable and willing to do what is required to be done without those props. Those of you just out of high school well might ponder over these sentences and look forward to an intellectual discipline you have not previously enjoyed in your school preparation.

We are different in other ways, too. Sure we would like a winning football team, but we don't want it at the expense of other values. Our interest is educational, not professional sport. We would like time and the places for the development of the easy amenities and trivia of college life, and all the "ivy-covered walls in the moonlight" experiences we read about. But we are realists as well as dreamers, and since you are here to learn and assume professional responsibilities, you recognize the dream must often be sacrificed to the reality.

We are a complex society of ambitious individuals each different yet with a common objective, mature in considerable degree, serious to a fault in our purpose, and, in the main,

(Please turn to page 20)

It is not often that the inclusion of a new mathematics course in the engineering curriculum attracts as much attention and causes as much comment as the new mathematics 103. From this you might conclude that something radical and revolutionary in mathematics has arrived on the campus. It might be revolutionary but there is most certainly nothing radical in this course, and it must be emphasized that there is no departure from sound mathematical practices and that the course is academically sound.

Since mathematics is such an important subject for engineers, the decision to put this course in the curriculum was not entered into lightly. This course is the fruition of many years experience teaching mathematics to engineers. For a long time Dr. Taylor, Executive Officer of the Mathematics Department, has had a growing conviction that many of the topics contained in the traditional differential equations course could be replaced by ones which would be more useful to engineers. The decision to initiate the course is the result of hours of careful weighing of its advantages plus many more hours spent examining engineering textbooks for the purpose of surveying the mathematical needs of engineers. His conclusion is that there are a number of methods for which the need seldom arises when solving certain differential equations.

No compromises are being made with the traditional sound mathematical teaching processes nor is any attempt being made to shortcut them; it will not be a course in "handbook mathematics." More than usual emphasis will be placed on the formulation and interpretation of the solutions of differential equations. It is not a panacea for the student engineer who will not or cannot follow the logical mathematical reasoning processes since the course is very definitely of the level of second group mathematics. However, it will be well within the range of the student's ability and those who come properly equipped from differential and integral calculus will find the terminology familiar.

Three semester hours credit will be given for the course, approximately two hours being spent on differential equations and one hour being spent on other topics. The present plans are to include some topics from advanced calculus and some work on complex numbers — all selected with due regard for their usefulness to the engineer. The precise course content will be developed in close cooperation with the engineering faculty.

A Message To Engineering Students

By Leon H. King, BEE '55

President, Engineers' Council

The continuing shortage of engineering personnel greatly enhances your future possibilities as a graduate engineer. The industrial growth of this country has been so rapid and has become so technically complex that our schools have not been able to meet the demand for qualified engineers. Estimates place the number of engineers in industry today at approximately 500,000. The Manpower Commission of the Engineers Joint Council foresees an additional demand by industry of 30,000 engineering graduates per year. Last year only 25,000 engineers graduated from technical schools, with 6,000 of these facing the draft. Higher mathematics are not needed to point out the opportunity that awaits you upon graduation.

An engineering degree alone, however, cannot be relied upon to pave your road to success. Since today's engineer must serve as a link between labor and management, industry is demanding that he have a thorough knowledge of human relations and of the social system in which he lives. In an effort to meet industry's demands, many technical schools have adopted programs which provide the prospective engineer with a two or three year background in liberal arts. Since our curriculum at The George Washington University is limited primarily to engineering subjects, it is important that you avail yourself of every opportunity to attain, in addition to the engineering fundamentals, those qualities which industry considers necessary for your professional development and advancement. Many of these qualities, such as leadership, sociability, tactfulness, clarity of expression, and the willingness to assume responsibility can be developed by active participation in your school organizations and activities.

Six professional engineering fraternities and societies which are designed to aid in the personal and professional development of the engineering student, have been established on the campus. These organizations consist of Sigma Tau, a professional honor society; Theta Tau, a professional engineering fraternity; and student chapters of the American Society of Civil Engineers, American Society of Mechanical Engineers, American Institute of Electrical Engineers, and the Institute of Radio Engineers. The membership requirements and activities of these fraternities and societies are found on page 13 of this issue.

In addition to the professional organizations, The Engineers' Council and **Mecheleciv** Magazine afford you excellent opportunities to gain valuable experience and recognition. Both the Council and **Mecheleciv** are dedicated to the improvement of school spirit and prestige. We have a good school, but here is your opportunity to make it even better.

Mecheleciv, the only publication issued by the School of Engineering, is staffed by student volunteers. New blood is needed to stimulate the magazine as well as to replace members of the staff who will be graduating this year. If you are not adept at writing, remember the staff of the magazine needs assistance with circulation and business details. Contribute to your magazine. The Editor welcomes news and your views. **Mecheleciv** is published six times during the school year by the Engineers' Council.

What is the Engineers' Council and what does it do? The Engineers' Council now consists of 14 members, two are elected from each of the six engineering organizations, the business manager of **Mecheleciv**, and the house manager of the Davis-Hodgkins House. The Engineers' Council acts as the coordinating body for the six fraternities and societies of the School of Engineering, constitutes the Board of Directors of the **Mecheleciv** Magazine, and is your activities organizer and liaison body with the faculty. The Council meets at the Davis-Hodgkin House, 731 Twenty-Second Street,

(Please turn to page 26)



A scene from the Engineers' Ball last year at the Hotel 2400. The annual Ball is another function of the Engineers' Council.

PROPOSED CHANGES IN

The Engineers' Council has proposed to the Societies and Fraternities that certain amendments to the Council Constitution be adopted this fall. These amendments, among other things, change the manner in which delegates are elected to the Council.

Obviously, amendments of this nature should be voted on by an informed student population. In the hopes that the amendments may be voted on in the October meetings of the Societies and Fraternities, MECHELECIV is presenting these amendments, and the reasons for the proposed change, for the consideration of every student.

The major criticism of the Council in the past has been that it is not a truly representative body, but yet represents the whole of the School of Engineering. The reason for inadequate representation has been that delegates are elected only from the societies and fraternities. The results in a council composed of juniors and seniors alone, with virtually no sophomore and freshmen representation.

This year's Council, recognizing this difficulty, has undertaken to remedy the situation. During the summer months they have drawn up amendments to their constitution that will modify the method of selecting the delegates.

Under the present constitution, there are twelve elected delegates, two from each of the six societies and fraternities. Two more delegates are appointed—the house manager of the Davis-Hodgkins House and the business manager of MECHELECIV.

When the proposed amendments go into effect there will be fourteen elected delegates elected as follows: one from each fraternity and society, and two from each class (freshman, sophomore, junior and senior). The two appointed delegates are the same as before. The chart below shows a breakdown of the delegates under both systems.

Organization	No. of Elected Delegates	
	Now	Proposed
AIEE	2	1
ASCE	2	1
ASME	2	1
IRE	2	1
Theta Tau	2	1
Sigma Tau	2	1
Freshman Class	—	2
Sophomore Class	—	2
Junior Class	—	2
Senior Class	—	2
Total	12	14

One freshman delegate will be elected from each of the two sections of ME 1, Freshman Orientation class, at the first meeting of the class in the fall. At the class meetings following the Council meetings they will report back to their classes to give brief summaries of Council activities and to receive instructions from their class on voting. In this way almost the entire freshman class will be represented.

The other three classes will be represented by two delegates each elected at a general election held in late spring. Each candidate will be voted upon by members of his class; e.g., the freshmen this spring will vote for the sophomore delegates for the following year, and so on.

The society and fraternity delegates will be voted on as in the past by their respective organizations at their group's spring election.

The term of all of the elected delegates will terminate in May—the freshmen serving from October to May; the remainder of the delegates serving from May to the following May.

The advantages gained by this new system should be obvious. At least four of the sixteen Council members will be freshmen and sophomores, whereas before there were none. Besides giving the Council more representation, this will provide more experience for future junior and senior members, since they will have had a chance to serve on the council in their freshman or sophomore years.

The societies have not lost any of their representation on the Council under the proposed set-up, since most of the societies would have at least one other member elected as an upper-class delegate. In fact, the societies that have a strong freshman and sophomore membership, would probably gain more strength on the council through the lower-class delegates.

At the October meetings of each Society and Fraternity the proposed

amendments will be brought up for a vote. In order for this new system to be effective, the majority of the students should vote in their respective organizations. Of the six groups, four must ratify the amendments before they take effect.

These proposed amendments will take effect gradually during this year after they are ratified in order to preserve the continuity of the Council. All present delegates will remain in office until May. The two freshman delegates will be elected this fall, however, and will serve in accordance with the amendments. Also, no February delegates will be chosen this year.

By next May, the change will have been completed and the amendments will have been completely put into effect.

Two other minor changes in the constitution also come up for a vote. The first changes the reference to the Engineers' house from the "Engineers' Clubhouse" to the "Davis-Hodgkins House," the official name. The other change is from reference to the "winter term" to the "spring term." These changes merely bring the constitution up to date.

These changes, it is believed, will improve the student organization of the school, and it is hoped that they will pass unanimously.

Presented below is the exact wording of the amendments for your consideration:

Proposed Amendment:

ARTICLE I TITLE AND PURPOSE

Section 3:

Delete: "Among the latter shall be"
Replace with: "These functions may include"

Delete: "Shall assume full financial and administrative responsibility for the Engineers' Clubhouse."

Replace with: "shall assume financial and administrative responsibility for the Davis-Hodgkins House as agreed with the University."

Section 3 now reads, as amended:
The specific purposes of the Council shall be to act as the coordinating agency for its member organizations; to act as the Board of Directors of the official student publication of the School of Engineering (The MECH-

THE ENGINEER'S COUNCIL

ELECIV magazine, or it's successor); and to sponsor general student activities and functions of the School of Engineering. These functions may include the Annual Engineers' Ball, the Annual Engineers' Banquet, Engineers' Mixers (for all Engineering students and faculty members), and the Annual Christmas Tree Lighting Ceremony, and the Council shall assume financial and administrative responsibility for the Davis-Hodgkins House as agreed with the University.

Proposed Amendment:

ARTICLE II MEMBERSHIP

Section 1:

Replace with:

"The council shall be composed of fourteen elected members and two appointed members. The elected members shall consist of one delegate from each of the freshman orientation classes; two members from each of the following classes: Sophomore, Junior, and Senior; and one member from each of the Engineers' Council member organizations. The appointed members shall be the business manager of the official student publication and the house manager of the Davis-Hodgkins House."

Section 4:

Replace with:

"Each member organization shall be represented by one delegate, elected in accordance with its particular rules governing elections, and the freshman class shall be represented by one member elected from each section of the freshman orientation class. The sophomore, junior and senior class delegates shall be elected by their respective classes at a general election. The freshman elections shall be held at the beginning of the fall term; all other elections shall be held near the end of the spring term. No delegate may serve more than two consecutive terms of delegacy."

Section 5:

Replace with:

"The freshman delegates will assume office at the first meeting following their election. All other delegates, appointed and elected, shall assume office at the end of the spring term to allow these new delegates to

prepare for the following year. The terms of all delegates shall terminate at the end of the school year."

Add the following Section:

Section 6:

The Dean's office of the School of Engineering shall determine; the students eligible to vote in the general election for the Sophomore, Junior, and Senior delegates on the basis of hours satisfactorily completed for a degree only. Candidates for Sophomore, Junior and Senior Class Delegates shall be approved by the Dean's office prior to the general election."

Proposed Amendment:

ARTICLE III OFFICERS

Section 6:

Delete: "winter"

Replace with: "Spring"

Section 6 now reads, as amended:

An election of officers shall be held at the last meeting of the Spring semester; officers so elected shall take office on the first day of June. . .

Proposed Amendment:

ARTICLE IV COMMITTEES

Section 1:

Add: "Election Committee"

Section 1 now reads, as amended:

The standing committees of the Council shall be the Program Committee, the Publicity Committee, the Financial Committee, and the Election Committee. . .

Proposed Amendment:

ARTICLE IV COMMITTEES

Add the following Section:

Section 6:

"The Election Committee shall handle all arrangements for the general election and the freshman election. The Election Committee shall be composed of senior council members appointed by the committee

chairman. The committee chairman should be the Vice-President of the Council provided he is a senior member of the Council. In the event the Vice-President is not a senior, or if he is eligible for re-election to the Council, the committee chairman shall be appointed by the President."

Proposed Amendment:

ARTICLE V AFFILIATES

Section 9:

Delete: "Engineering Student Club-house"

Replace with: "Davis - Hodgkins House"

Section 9 now reads, as amended:

The house manager of the Davis-Hodgkins House shall render a verbal report of the activities of the house at each Council meeting. . .

Proposed Amendment:

ARTICLE IX AMENDMENTS

Section 1:

Delete: "member organizations"

Replace with: "members"

Section 1 now reads, as amended:

This constitution may be amended by favorable vote of two-thirds of the members of the Council.

Proposed Amendment:

Add the following Article:

ARTICLE X CONFLICTS

Section 1:

In the event of a conflict between this constitution and the constitution of the Student Council of The George Washington University, the Student Council Constitution shall take preference and steps should be taken to correct the conflict in this constitution.

Section 2:

In the event of a conflict between this constitution and the constitution of a member organization of the Engineers' Council, this constitution shall take preference, and steps should be taken to correct the conflict in the member organization's constitution.

LISTENING IS A SCIENCE

A Sigma Tau Paper Entry

By Carl P. McCall, BEE '55

(ED. NOTE: Students elected to Sigma Tau must, during their pledgship, write an original paper on any technical subject. The MECHELECIV staff has selected this paper, written for the initiation last spring, as an example of the good papers submitted.)

The audiometer is an instrument for measuring the power of hearing or the audibility of intensity of sounds. Audiometric procedures are used mainly in detecting and investigating impaired hearing. The results of such measurement are expressed in terms of "hearing loss," and the unit of measurement employed is the decibel.

In earlier experiments in audiometry, bells, tuning forks, coin-clicks, and the whispered voice were employed in the testing procedure. However, the results were varied and inaccurate, and the element of control in the experiment was virtually impossible. With the advent of the vacuum tube and advances in electrical design, compact and highly stable audiometers have been built and are now produced in commercial form.

All modern audiometers may be adjusted and calibrated to give essentially identical results within practical tolerances. Thus comparison of the results of audiometric tests made at various laboratories or clinics may be safely made. Of these modern type audiometers, there are two main types currently being used. These are: (1) Pure tone, and (2) Speech.

The audiometer in both the above forms is available commercially, however, at the present time the pure-tone audiometer is more widely used. For this reason, i. e. the widespread use of the pure tone audiometer, the material which follows refers to this type of instrument.

The pure-tone audiometer is composed of three units: (1) An electric oscillator for generating alternating electric currents of the desired frequencies; (2) An amplifier with a volume control (attenuator); (3) An earphone for applying sound to the listener's ear.

Variations of this type of instrument may employ recordings to supply the sound signal or a loudspeaker to apply the sound to the listener's two ears simultaneously. The sound pressure level of the sound is adjusted by the attenuator dial which is calibrated in decibels. The frequency of the sound is selected by means of another dial or other means which



A type of Audiometer.

is marked in cycles per second. The two controls are similar to the dials on a radio set, one to tune the frequency and one to control the sound pressure or volume of the sound.

Either of two types of earphone may be used: (1) The air-conduction type similar to that on a telephone from which the sound is conducted by air down the auditory canal to the eardrum, or (2) bone-conduction type which is pressed against a bony portion of the head (usually the mastoid, back of the ear) from which the sound travels through the skull to the inner ear.

Both types of earphone are used in diagnosis, and they may not yield the same results on a given ear. A marked differential between the results of an air-conduction test and those of a bone-conduction test on the same ear may assist in the diagnosis of the type of hearing impairment. For example, if the inner ear is normal but a mechanical obstruction exists in the middle or outer ear, the hearing loss for air-conducted sound may be much greater than for bone-conducted sound.

As to the audiometer itself, two varieties of pure-tone audiometer are in common use: (1) The fixed-frequency or discrete frequency type, and (2) the sweep-frequency type.

The discrete-frequency audiometer generates sounds of only a certain limited number of frequencies. The frequencies supplied are usually the octaves of 32 c.p.s. For example,

(Please turn to page 16)

SOCIETIES AND FRATERNITIES

THETA TAU



Theta Tau, an engineering professional fraternity, was founded at the University of Minnesota in 1904. The purposes of the organization are to help develop a high standard of professional interest among student engineers and to unite students in the various fields of engineering with strong bonds of fraternal friendship. Therefore, its membership requirements are such that Theta Tau does not compete with either social fraternities or engineering honor societies.

Theta Tau is represented at The George Washington University by the Gamma Beta Chapter. The Regent of this organization for the coming year is William Wiedemeyer, while Robert van Sickler serves as Vice Regent.

Each year the chapter has two Invitation Balls and Banquets for its new members. In addition, a shrimp feast is held each fall and a picnic is held during the summer. Also during each semester, there are several pledge parties for prospective members.

Membership into Theta Tau is obtained by invitation only. Prospective members are selected from engineering students in good standing. Preference is often shown for students who are active in the societies or with Mecheleiv.

AIEE - IRE



The AIEE - IRE Joint Student Branch is composed of two independent societies, namely, The American Institute of Electrical Engineers, and the Institute of Radio Engineers.

The AIEE was founded in 1884, and has as its objective the advancement of the theory and practice of Electrical Engineering, and the maintenance of a high professional standing among its members. Student membership is open to all students of Electrical Engineering and allied fields.

The IRE was founded in the early 1900's and has to do solely with the advancement of the theory and practice of communications. Student membership is open to communications majors in Electrical Engineering, and allied fields.

Membership in the Student Branch does not entitle the rights and privileges of National Membership unless one is a Student member of the National.

A. S. M. E.



The George Washington Student Branch of the American Society of Mechanical Engineers is open to all interested engineering students. Naturally its primary purpose is to meet the needs of those students that are majoring in Mechanical Engineering.

The Society meets on the first Wednesday of each month for a combined business and technical meeting. Speakers representing various segments of industry and government are invited to talk on their specialties. Sometimes technical movies are substituted for the speakers. Refreshments are served after the meetings.

The current leaders of the society are George Bierman, President, and Henry Paris, Vice President. The honorary chairman is Professor Cruickshanks.

The A. S. M. E. Student Branch of The George Washington University is sponsored by the Washington Section of the A. S. M. E. The parent society has also opened its meetings to student members and has extended an invitation to the students to attend their various inspection trips. Details will be made available to the branch offices.

On registration day, officers of the student branch will accept membership applications and also distribute membership blanks and information. Sign up as soon as you can and support your current officers in their endeavor to make this the best year ever for the A. S. M. E. Student Branch of The George Washington University.

SIGMA TAU



At The George Washington University there are four major academic achievement societies: Phi Beta Kappa for the Columbian College, Order of the Coif, for the Law School, Sigma Xi for science majors, and Sigma Tau for the Engineering School. Membership into each of these societies is based upon scholastic standing in the junior and senior classes. In Sigma Tau eligible students must stand in the upper one-third of their class.

Sigma Tau was founded in Lincoln, Nebraska on February 24, 1904. Xi Chapter, here at GW, was established on April 18, 1921 and is now one of 28 chapters in the nation-wide society.

Nationally, Sigma Tau has been a member of the Association of College Honor Societies since 1934, a position enjoyed only by the better national honor societies. Locally, Xi chapter is extremely active in projects designed to help the student body, the school, and the University.

(Please turn to page 24)

NEWS AND VIEWS

THETA TAU STAGES PICNIC

On July 17 the Theta Tau chapter held their annual summer picnic at Fort Washington. Close to one-hundred Theta Taus, wives, girlfriends and guests were in attendance enjoying the food, drink and skitzels.

Brothers Casey Mohl and Paul Kuzio retained their horse-shoe pitching crown throughout the day, although their competition was unusually stiff. The volley-ball and softball games were hotly contested, although no one remembers the scores.

One of the highlights of the picnic was the announcement of the engagement of Kingsley Brown to Janice Lear, a Kappa Delta at the University.

ENGINEERS TO ENTER FLOAT

The Engineers' Council is to enter a homecoming float in the parade this November, it was decided at the August meeting.

This will be a new venture for the slip-stickers, and hopes are high for an easy victory.

Any students interested in working on the project may contact the

Engineers' Council to volunteer their services.

Theta Tau is considering entering a float of their own in the contest. It is hoped by MECHELECIV that other organizations, especially Sigma Tau, will consider building a float also.

Although only one float can win from the School of Engineering, under the present rules for the competition, several good entries would do much toward enhancing the reputation of the Engineers on Campus.

NEW COUNCIL AMENDMENTS TO BE VOTED UPON

By this time just about every student should have heard of the new amendments to the Council constitution that are presented in this issue. We hope that every student will consider them and that a favorable vote will be taken at the October meeting of each organization.

These amendments are the basis upon which the Council plans to operate this year to provide more student interest in extra-curricular activities. We feel confident of the success of this new program.

THETA TAU TO HOLD CONVENTION

The golden anniversary of the Theta Tau Fraternity will be celebrated by many GW members at Minneapolis on October 13, 14 and 15.

The University of Minnesota was picked as the place to hold this convention, since it was at this school that Eric Schrader was instrumental in founding the Fraternity exactly fifty years ago on October 15.

The students and faculty who are attending are looking forward to seeing Eric Schrader at this function.

SIGMA TAU TO HOLD CONVENTION ALSO

Not to be outdone by their professional counterpart, Sigma Tau Fraternity also plans to hold their fiftieth year celebration this fall.

This golden jubilee will be held in Lincoln, Neb., on November 10, 11, 12. The University of Nebraska was the founding institution of the honor society.

Unfortunately, due to the distances involved, only one or two GWites will be able to attend the convention.

STUDENT PAPER REMINDER

Every spring many of the societies hold a student paper competition. The student who presents orally the best paper usually wins a handbook or a similar prize and is eligible for further competitions and more prizes.

Although the spring seems to be a long time away, now is the time to begin preparing the papers. Papers on some phase of summer work are always good bets for the contest.

Students should contact their society chairmen at the October meeting for further details.

FISHING TRIP

On Saturday, August 7, 1954, nine of us engineers got together and went out to Deale, Md., hired two boats, three cases of beer, and went fishing. Those on the trip were: Harry M. Brandler, Bob van Sickler, C. K. Brown, Paul Kuzio, Thomas Creswell, Frank Robinson, Phil Martin, Thomas Flanagan, and Matt Foster. A good time was had by all, and the fish enjoyed it also. Paul Kuzio caught the most fish (19), and received a medal for it. However, it may be said that a few smart boys didn't waste their time fishing, but got right to work on the beer. In the near future, we hope to make another trip of this sort, and the more that come, the merrier.



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ENGINEERING PERSONALITIES

CHARLES E. GREELEY



This genial Associate Professor of Mechanical Engineering, who is always ready to lend his support to student activities and who is never too busy to listen to the trials and tribulations of the undergraduate, was born and raised in Minnesota.

Following his graduation from the University of North Dakota, he began his career with the Fairbanks, Morse and Company as a design engineer in the Diesel Engineering Department. Subsequent to that he spent two years with the Bureau of Ordnance, U. S. Navy and two additional years with the Bureau of Ships, U. S. Navy. He has been a member of the engineering faculty since 1946.

His World War II service as an engineering officer on various ships of the U. S. Merchant Marine took him to many far-away ports with strange and unfamiliar names and if you are a lover of sea stories ask him to spin for you one of his hair-raising yarns about some of the obscure African ports which he visited.

While not engaged in his duties as engineer-in-charge of the Mechanical Laboratory you may find him engaged in his favorite hobby which is sailing. But even more likely you may find him working on his long-term home-building project in which he is architect, plumber, carpenter, mason and electrician. Mrs. Greeley, who helps with many of the details, including the mixing of mortar; says the house is being built to her specifications.

Some of the organizations of which he is a member and to which he actively contributes his support are Theta Tau, Sigma Tau, ASME, SAE and ASCE. He was Chairman of the Washington section of ASME in 1952 and 1953.

We are very happy to acquaint the new class of freshmen engineers with one of the Engineering School personalities which will shape your future careers and leave its imprint on your character. Do not be mislead

BILL WIEDEMAYER

Any list of George Washington University's more capable students would have to include conscientious, hard working Bill Wiedemeyer, a senior in Civil Engineering. Long working hours on an outside job and a full load of activities are hardly compatible with good grades, but Bill keeps his index near the top despite his rugged schedule.

Bill's favorite activity and probably his most difficult assignment is handling the leadership of Theta Tau, professional engineering fraternity for GW students. As Regent of Theta Tau he spends many hours planning fraternity functions, and, along with his fellow members, endeavoring to make Theta Tau the most effective organization in the Engineering School. Bill's ability to



disagree with people and at the same time maintain their friendship serves him and his organization very well.

Besides being Regent of Theta Tau, Bill is also a member of Sigma Tau, the engineering honorary fraternity that recognizes scholastic achievement. He is also a member of the American Society of Civil Engineers and last semester, his "Prestressed Concrete" paper won that society's award for the best student paper on a civil engineering project. Bill is a past vice-president of the society.

Bill Wiedemeyer is a navy veteran and served during the years 1946 to 1949 which immediately followed his graduation from Decatur High School in Illinois. Bill is married and maintains an apartment in Southeast Washington along with his wife Lucy and his five month old daughter, Kristie.

(Please turn to page 18)

by his easy-going, relaxed manner because it covers a keen, perceptive intellect which quickly penetrates to the hard core of the problem, reduces it to its basic elements and produces the correct solution.

PAUL KUZIO

The irrepressible Paul Kuzio, with his dual capacity for enjoying life and providing a steady influence on fellow students, has emerged as a dominate figure in the thoughts and actions of the George Washington Engineering School.

Paul is a senior in Civil Engineering and will graduate next June. He is attending school under the G.I. Bill of Rights which he became eligible for by serving in the Army Signal Corps from November 1943 to February 1946.

Despite the fact that Paul entered the service immediately after graduating from Washington High School (Frackville, Pennsylvania), he rose rapidly to the rank of first sergeant, a position usually reserved for men of more mature years.

During his service time and since his return to civilian life, Paul became very well traveled. He has been in all 48 states, Alaska, New Guinea, Leyte, Mindoro, Luzon, Okinawa, and Japan. He was overseas with the U. S. Civil Service in Japan from 1946 to 1950.

At The George Washington University, Paul is a member of the Engineer's Council, the American Society of Civil Engineers and Theta Tau, the engineering professional fraternity. He is past Treasurer of Theta Tau and his ability to collect funds from the Theta Tau Alumni has become legendary.

Two of Paul's pursuits are poker and golf and he excels at both. He is also keenly interested in photography and has converted part of the basement of his Virginia Hills (Fairfax County) home into a darkroom.

Paul, like many of George Washington's engineering students, is married and he and his wife Wilda, have one child, a dark eyed girl of two, Diane.



After graduation, Paul hopes to stay in this area. At the present time he is a full-time member of the engineering staff of Atlas Machine and Iron Works of Arlington, Va.

(Continued from page 12)

a discrete-frequency audiometer may provide tones of 128, 256, 512, 1024, 4096 and 8129 c.p.s. These are the ones most frequently used in clinical audiometry.

The sweep-frequency audiometer is so designed that by turning the dial, tones of any frequency between a lower and an upper limit may be secured, rather than merely discrete frequencies. This type audiometer is the more flexible of the two types inasmuch as it permits determination of the pattern of hearing loss versus frequency in as much detail as desired. In addition, it makes an additional technique of measurement possible.

In order that all pure-tone audiometers may yield essentially identical test results, it is necessary that each be adjusted so that it produces the same level of sound in a listener's ear for a given setting of the frequency and hearing-loss controls. It is necessary, also, of course, that the frequency of the sound produced be accurate, within reasonable tolerances, and that the steps on the hearing-loss control be those indicated on the dial, within reasonable limits. For a hearing-loss setting of zero (normal threshold) the level of the sound pressure produced in a listener's ear must be that which represents the modal value of the threshold of hearing for a large number

of normal ears. (The official calibration agency in the United States for pure-tone audiometers is the National Bureau of Standards in Washington, D. C.)

The operator of the audiometer begins with a sound level definitely audible to the patient (listener), and then gradually reduces its level by turning a calibrated dial until the patient signals he can no longer hear the signal. The reading of the dial, which is usually calibrated in 5-decibel units, is noted by the operator. The operator then brings the sound up from this point of inaudibility to a point where the listener signals he can hear once again, and a reading is noted. Several such pairs of readings may be taken and an average obtained which is considered to represent the hearing loss of the patient for the particular sound signal employed. Often, in using a pure-tone audiometer, the hearing loss may be determined for sounds of a number of frequencies and the results plotted on a graph. Such a graph is called an audiogram.

Performance specifications for pure-tone audiometers have been established by a number of organizations. Typical of such specifications are the "Minimum Requirements for Acceptable Audiometers" set up by the Council on Physical Medicine of the American Medical Association.

From the tolerances on frequency and sound

pressure of test tones which are quoted in these particular requirements, the audiometer would appear to the experienced acoustical worker to be an instrument of rather low precision and accuracy. However, the nature of the use to which it is put is such that a higher precision is not necessary or even useful.

As pertains to frequency and intensity levels, the minimum requirements are "The frequency of each of these test tones shall not in any case depart by more than plus or minus 2.5% from the indicated frequency," and "The difference in measured intensity levels corresponding to adjacent settings shall not vary from 5 decibels by more than plus or minus 1 decibel for any frequency.

A frequency differential of 2.5% of a sound pressure differential of 1 db is hardly detectable by the average ear. The variation in response of a given patient, when tested at

(Please turn to page 20)

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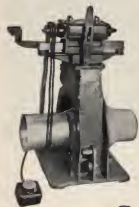


Fig. 1—Original Design of wire straightening machine. Required considerable machining, cleaning and finishing prior to painting.

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3. You plan now to attend the Engineers' Ball and Banquet during the Spring Semester.

•

4. You consider volunteering your services to the MECHELECIV magazine. Both reporters and business aids are needed.

•

5. You do not become discouraged because you lack time to attend your many duties.

PERSONALITIES

(Continued from page 15)

During the summer, Bill works full time on engineering assignments for Humphreys and Harding Construction Company. The first part of this summer, he tried working for the government, but found the job too confining and went back to Humphreys and Harding.

Bill hopes to remain in this area after he graduates next June, but naturally he is not planning definitely on it. Wherever he goes, whatever he does, Bill can be counted on to do his part as an engineer and as a citizen.

1954 VARSITY SCHEDULE

Home Games

Sept. 25 — VMI at Alex., Va. (Colonial's Day)

*Oct. 22 — William & Mary (Congressional Night)

*Oct. 29 — Richmond (Dad's Day)

*Nov. 5 — VPI (Homecoming—Senior's Day)

Away Games

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Oct. 2 — Virginia

Oct. 9 — West Virginia

Oct. 16 — Pennsylvania

Nov. 20 — Maryland

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DEFINITION OF AN ENGINEER

An engineer is one who passes as an exacting expert on the strength of being able to turn out with prolific fortitude strings of incomprehensible formulae calculated with micrometric precision from extremely vague assumptions which are based on debatable figures acquired from inconclusive tests and quite incomplete experiments carried out with instruments of problematic accuracy by persons of doubtful reliability and of rather dubious mentality with the particular anticipation of disconcerting and annoying everyone outside of their own fraternity.

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(Continued from page 8)

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We are happy you are here to be a part of us. Some of you didn't choose us, we're just the best you could do, we hope you grow to like us. Some of you may be disappointed in us, or disenchanted by our nature, to you we wish good luck and Godspeed. Most of you will soon be part of us, we welcome you with open minds and gentle hearts. The School is yours, treat us with understanding, criticize with reason, learn and build with hope, and give us your devotion, for in truth — you are the School.

ATTENTION ALUMNI

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*Let us know of any news you would like to
see on this page.*

LISTENING IS A SCIENCE

(Continued from page 16)

various times by the same operator, with the same audiometer, may be in the order of 10 db.

In conclusion, the audiometer as a valuable scientific testing mechanism has come into its own right during the war and post-war years. There has been an increased need for an instrument of this type in veterans hospitals as well as by the military. There is also a constant and growing need for dealing with the hearing-loss problem among the civilian population, and this need coupled with the military has produced a new field of research on which there remains much to be accomplished.

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"I am prepared to pay cash," said the farmer, "Will I get a discount?"

"Why certainly," replied the salesman. "We will give you a 10% discount on a cash purchase."

Not being confident of his ability as a mathematician, the farmer said he would think it over and return later.

He walked into a restaurant and over his coffee tried to figure what his discount would be, but to no avail. Finally in desperation he turned to the waitress and asked, "If I gave you 10% of \$5,000 how much would you take off?"

Blushing prettily, the waitress whispered, "Would my earrings bother you?"

She was only the optician's daughter—two glasses and she made a spectacle of herself.



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How to design a freight car one man can push

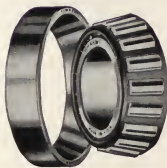
You can make a big 55-ton freight car roll so easily one man can push it. How? By mounting its axles on Timken® tapered roller bearings. Timken bearings roll the load, eliminate the metal-to-metal sliding friction that makes old-style friction bearings start hard. They reduce starting resistance 88%. And, with Timken bearings, there's no danger of hot boxes — the major cause of freight train delays.

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SOCIETIES AND FRATERNITIES

(Continued from page 13)

As a member of the Engineers' Council, Xi chapter takes an active interest in its efforts to constantly increase the prestige and potential of the Engineering School. Plans are in effect toward the initiation of a program for building visual aides as a means of explaining the more complex phases of engineering education. Because GW includes many foreign-born among its student body, Sigma Tau is participating in a program designed to help these men overcome the language barrier. Also, the chapter offers assistance to any lower-class students in any of their engineering courses.

Membership in Sigma Tau is an honor for which every engineering student should strive. Not only will it stimulate him to greater scholastic achievement, but it will also promote development of leadership, which carries with it the principle of service, and the measure of service is the true index of worth of the student and the organization that counts him as a member.

Although membership in Sigma Tau is limited to the junior and senior classes, recognition is given annually at the Engineers Banquet to the Sophomore student who, during his freshman year, has attained the highest grades in his engineering courses.

A. S. C. E.



The saying 'Opportunity knocks but once' holds infallible in most cases; however, that is not so when it applies to joining your ASCE Student Chapter at GWU. If you already are an active member, you know very well that in the past you have had good opportunities to meet at the monthly sessions top engineers in various fields who not only inspired you along this hard and long road of knowledge but will be very glad upon your graduation to give you a helping hand in getting started in your career. If you have been contemplating joining and did not do so a year or two ago, opportunity is knocking once more at the beginning of this semester.

Meet your elected ASCE Officers for the year: Stuart Terrett, President; Al Giraldi, Vice-President; Marie Mitchell, Secretary; S. Zervakos, Treasurer; Tom Flanagan and Paul Kuzio, Engineer Council Representatives.

An interesting as well as a varied program for the year is well on its way. The first meeting will be held on the evening of Wednesday, October 6 when a technicolor film on the construction of Grand Coulee Dam will be shown.

At other meetings, you will have the opportunity to question experts on technical matters of importance to you. If you are undecided as to which phase of civil engineering your interests lie, here again is an opportunity to question experts on technical matters of importance to you. If you are undecided as to which phase of civil engineering your interests lie, here again is an opportunity within your ASCE Student Chapter, to learn of the wide range of careers civil engineering covers. A new and successful life for you may depend upon your attending one of the meetings. Make it easier for yourself, upon graduation, to join the Professional Engineering Societies.

Meet your fellow engineering students at the Davis-Hodgkins House located at 731 - 22nd St., N.W. whenever you feel you have a few minutes to spare. You may relax there watching TV or perusing through Engineering magazines.

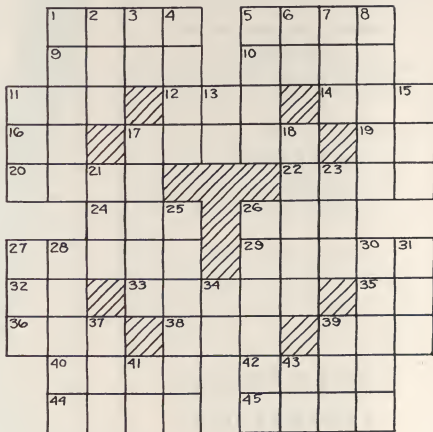
COLONIAL *P*UZZLE TRIAD

Starting with this issue this page will include a triad of puzzles of interest to the engineer. The first, the Cryptogram, will present a well-known axiom of mathematics, physics or engineering. The second, the Problem, will be an exercise requiring simple arithmetic, but good use of the engineer's common sense. And the third, the Crossword, will contain key words familiar to the student.

The cryptogram is a message in coded form. The words and letters appear in their proper order and with proper punctuation, but different letters have been substituted for the actual ones. No letter is substituted for more than one other letter.

One way of approaching this problem is to look for the letter substituted for "E", since this letter normally appears the most often. Single letter words could only be "I" or "A". From there you're on your own with only your hunches and knowledge of English sentence structure to help you.

The answers for this month's triad will appear in the November issue.



III. CROSSWORD:

ACROSS

- 1 Engineering student organization
- 5 Engineering student organization
- 9 Go by
- 10 Man's name
- 11 Peep
- 12 Prefix—three
- 14 Pronoun
- 16 Element (Symbol)
- 17 Poison
- 19 State (abbrev.)
- 20 Girl friend
- 22 Latch
- 24 Greek letter
- 26 Prefix—sit
- 27 Hank
- 29 Expiate
- 32 Preposition
- 33 Prefix—four
- 35 Conjunction
- 36 Trouble (slang)
- 38 Assistance
- 39 A profession (abbrev.)
- 40 Rodents
- 42 Island
- 44 Woman
- 45 Famous store

DOWN

- 1 Fruit
- 2 Mention
- 3 Academic degree
- 4 (You) are (Spanish)
- 5 Similar
- 6 Yes (Spanish)
- 7 Bawl
- 8 English College students
- 11 Unhappy
- 13 State (abbrev.)
- 15 Referee (abbrev.)
- 17 Characteristic
- 18 Greek letter
- 21 Consumed
- 23 Fuss
- 25 Restless
- 26 Ancient capital of Lydia
- 27 Title
- 28 An excrescence
- 30 8th day before the Ides
- 31 Work unit
- 34 Note of scale
- 39 Animal
- 41 Football term
- 43 Continent (abbrev.)

I. CRYPTOGRAM:

IVK BPYDSK CS IVK VORCIK-
QCYBK CED SLZGILSDQZNK LB
KPYDN IC IVK BYG CE IVK
BPYDSKB CE IVK CIVKS IAC
BLTKB.

II. PROBLEM:

A water lentil reproduces by dividing into two every day. Thus on the first day there is one, on the second day there are two, on the third day four, and so on. If, starting with one lentil, it takes thirty days to cover a certain area with lentil offspring, how long will it take to cover the same area if we start with two lentils?

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MESSAGE TO ENGINEERING STUDENTS

(Continued from page 9)

N.W., on the fourth Wednesday of each month. You may attend these meetings as an observer, to discuss your problems, or to offer suggestions.

The Engineers' Ball and Banquet is the gala social event of the year and has been tentatively scheduled for May 7. This is an ideal time to join your fellow slip-stick artists for an evenings' fun and relaxation before beginning serious preparation for final exams. During the intermission between the banquet and ball, various School awards are presented to deserving students. Last year's ball and banquet was highly successful; let's make this year's affair even bigger and better than before. **Remember you have a date for May 7, at the Engineers' Ball and Banquet.**

Other activities scheduled for the 1953-54 school year include a homecoming float, the annual Christmas tree lighting ceremony, and the career conference. More details on these activities will be announced in **Mechleciv**, the **Hatchet**, and on bulletin boards.

Since your first concern after graduation will be securing a desirable position of employment, you should carefully prepare yourself for the job interview. Remember you will be judged on your scholastic record, your personality, and extent of prior experience. Some engineering graduates have started at higher salaries than others because they had a record of active participation in student body groups. Personal characteristics are weighted equally with job performance. Help **yourself** and **your school** go forward by taking an active part in as many activities and organizations as possible. You will cultivate and develop personal characteristics which are invaluable aids for professional development and advancement. Now is the time to supplement your technical training with energetic participation in school organizations and activities.

IN OUR NEXT ISSUE

E. J. BASS of Engineering Research Corporation, describes the application of electronic computing systems to the various types of flight simulators.

* * *

SAM MAWHOOD, will tell us about the opportunities offered to engineering students by The National Bureau of Standards for part-time and summer jobs in engineering work.

Photography took a look *and a harvester got a stronger set of teeth*

John Deere engineers, building a new beet harvester, wanted spring-tooth disposal wheels with long life. High-speed movies showed the way.

The disposal wheels on the new John Deere beet harvester moved faster than the eye could see.

So the engineers studied them in action, slowed down by the high-speed motion picture camera. A small difference in design resulted in extra-long life for the spring teeth.

Slowing down fast action is but one way photography helps product design and manufacture. With x-rays it searches out hidden faults in castings, welds, and assemblies. And by photographing cathode ray traces, it discloses the causes of improper operation. These are but a few of the ways photography saves time, reduces error, cuts costs and improves production.

Graduates in the physical sciences and in engineering find photography an increasingly valuable tool in their new occupations. Its expanding use has also created many challenging opportunities at Kodak, especially in the development of large-scale chemical processes and the design of complex precision mechanical-electronic equipment. If you are interested in these opportunities, write to Business & Technical Personnel Dept., Eastman Kodak Company, Rochester 4, N. Y.

**Eastman Kodak Company
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With the high-speed motion picture camera, John Deere engineers took pictures of their spring-tooth wheels in action at 3000 a second. Projected at the standard 16 frames a second, the motion was studied, slowed down to almost 1/200 of its actual speed.

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Thomas Edison invented his electric light at age 32.

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